C-CAT Mini®

User Manual

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NOTICE: THIS PRODUCT IS RESTRICTED TO LAW ENFORCEMENT USE

FCC Information

FCC ID: 2AIQA-CMVAD100

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Sierra Innotek, Inc. may void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING! Device may get warm! Avoid positioning against bare skin during operation.

RF Exposure warning statements:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter can be in contact with the user and must not be co-located or operating in conjunction with any other antenna or transmitter.

The information in this guide may change without notice. The manufacturer assumes no responsibility for any errors that may appear in this guide.

C-CAT Mini Overview

The C-CAT Mini is a compact, portable VHF audio transmitter. Some models also incorporate a built-in audio recorder. The transmitter is capable of multiple RF power settings up to 100 milliwatts, which may be switched off for record-only operation. A removable 32GB MicroSD card (if so equipped) can store up to 270 hours of recorded high quality, mono audio.

C-CAT Mini's state-of-the-art digital signal processor permits crystal clear audio to be transmitted to a remote receiver and recorded to the MicroSD memory card using the highly-sensitive, built-in digital microphone.

The C-CAT Mini is equipped with frequency-inversion scrambling, which may be selected to render tansmitted audio unintelligible to casual listeners.

C-CAT Mini uses an internal clock to date and time stamp recordings saved to the SD Memory card.

Setting up C-CAT

A. **C-CAT external features** – C-CAT Mini's external features include a connector for the VHF antenna, a power switch, status LED and microphone on one end (see Figure 1). On the other end is a MicroSD card socket (see Figure 2). On one side a USB MicroB connector is provided for charging and/or powering the C-CAT Mini. The small hole for the internal microphone should not be covered.

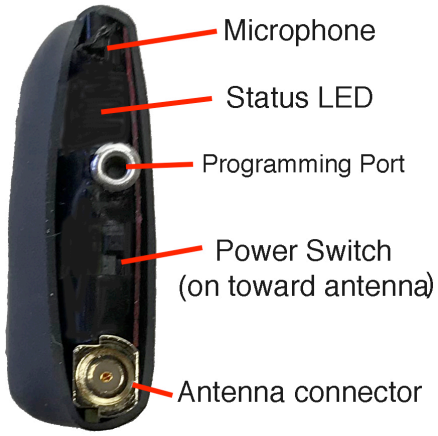

Figure 1

Figure 2

B. Batteries – Depending on the model of C-CAT Mini, power may come from either the built-in, rechargeable lithium ion battery or via “pig-tailed” wires from an external power source. For models with an internal battery, charging is accomplished via the USB Micro-B connector. When connected to most USB power sources such as wall transformers, cigarette lighter chargers, and USB ports on laptops and other devices, the battery will fully charge in a little over an hour. When the battery is charging, an orange “charge” LED is lit, when the battery is fully charged, a green “charged” LED is lit (See Figure 3). C-CAT Mini can operate *while* charging, if the USB power source is capable of supplying 250 mA or greater. Leaving C-CAT Mini plugged in to a USB power source will not harm the internal battery. If C-CAT Mini’s transmit or record duration becomes significantly shortened, the internal battery may need to be replaced. Contact Sierra Innotek, Inc. for service.

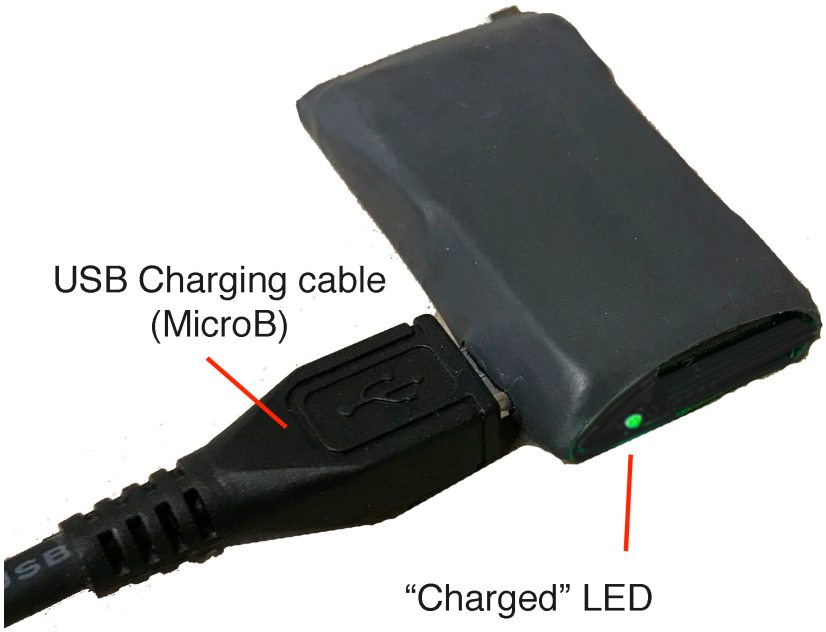

Figure 3

C. **Antenna** – Connect C-CAT Mini's antenna to the antenna jack by carefully inserting the antenna plug into the jack. The connector will click when fully inserted (see Figure 4).

NOTE: It is important when inserting or removing the antenna to grasp the gold antenna jack with one hand and the C-CAT Mini at the antenna plug with the other. Do not pull on the antenna wire, as this may damage the antenna.

For best radio transmission, C-CAT's antenna should be kept straight and away from metal objects when transmitting. Do not wrap the antenna in a coil or around the C-CAT Mini.

Figure 4

D. C-CAT Mini's microphone is EXTREMELY sensitive. Do not blow into the microphone, tap on the microphone hole, or cover the hole with tape.

E. **Transmitting audio** – In most uses C-CAT Mini will be configured to transmit audio automatically when the unit is powered on. If radio transmission of audio is not desired, C-CAT Mini's transmitter can be turned off. The transmitter settings may be set by your department's technical support personnel.

F. **Audio recording** – If the C-CAT Mini model you are using supports audio recording and a MicroSD card with available space is inserted, C-CAT Mini will automatically record audio when the unit is powered on. The SD card's label should be oriented as shown in Figure 5. The MicroSD card can be inserted and removed either with power on or off.

Figure 5

- C-CAT Mini records audio in a 16bit, 16 ksps WAV audio file. The file format is FAT32. Each recording is date and time stamped as part of the file name. The file name format is serial#_YYYYMMDD_HHMMSS and reflects the time and date that the recording was started. For example, a recording starting at 9:05 pm on August 4, 2018 on C-CAT Mini with serial number "12345" would create a time stamp of " 12345_20180804_210500." The file's "date modified" information will indicate when the recording terminated.
- FAT32 files are limited to 2GB in file size, so C-CAT Mini will record approximately 17 hours and 50 minutes of audio to a single file. If card memory is available, C-CAT Mini will automatically continue to record by creating a new file and repeat this process until C-CAT Mini is turned off, batteries are exhausted, or the SD card is full. Each file will have its own date and time stamp.

G. **Powering on** – To power on C-CAT Mini, slide the power switch toward the antenna. When finished using C-CAT Mini, slide the power switch to off.

H. **LED Indicator** – C-CAT Mini has an LED to indicate status. The LED is visible by looking into the small hole near the power switch (see Figure 1).

LED indications:

- Alternating RED/GREEN – C-CAT Mini is loading settings (about 3 seconds)
- Solid GREEN – SD card present, C-CAT Mini operating
- Flashing GREEN – NO SD CARD PRESENT. Transmitter operating
- Solid RED – BATTERY LOW – RECHARGE

  Note: When C-CAT Mini battery is low, with about 2-3 minutes of transmit time remaining, C-CAT Mini will transmit (but not record) a series of audio "beeps". These beeps will repeat every 30 seconds until C-CAT Mini turns the transmitter off due to excessively low batteries. C-CAT Mini will continue to record audio to an SD card, if present, until the batteries are completely exhausted. It is recommended to always fully recharge C-CAT Mini (leave on charger indefinitely)

- Flashing RED – Indicates a configuration error OR hardware error.

  Configuration error.

  - If the transmitter is set to "OFF" ***AND*** no SD card is present, a configuration error will occur (this is because C-CAT Mini is being asked to do nothing but consume batteries). Either insert an SD card (to record only) or set th etransmitter to a power level other than "OFF." Turn power off and then on to reset. If the error persists make sure the MicroSD card is formatted as FAT32 and has space available.

  Hardware error

  - If **either** the transmitter is set to "ON" OR an SD card is inserted and the LED flashes RED, then an internal hardware failure is indicated.
  - RESET -Insert a paperclip into C-CAT Mini's reset pushbutton hole on the side opposite the USB connector and push gently. The LED should alternate RED/GREEN to indicate startup and then operate normally. If the problem continues to persist, contact Sierra Innotek, Inc. for technical support.

NOTE: LEDs will only light during power-up, when placed in Configuration mode (by technical service personnel, or if an SD card is inserted after power-up.

2. Cleaning and maintenance

A. To clean, wipe with damp (not wet) cloth. Avoid getting water into openings. A soft cloth moistened with alcohol may also be used to remove tape residue.

B. Internal clock – C-CAT Mini incorporates an internal clock to maintain the current time and date. If the internal rechargeable battery is allowed to fully discharge, it will be necessary to re-synch C-CAT Mini with an iOS device such as a smart phone, so that the correct date and time may be re-set. Models which do not have an internal battery will need to be synched after power-up so that the date and time may be set if desired. Interruption of external power on models without an internal battery will cause C-CAT Mini to lose the date and time.

Specifications

RF Power into 50 Ohm load	**100 mW nominal, settable to 10, 25, 50, 100 mW or off**
Frequency Range	**150.000 to 173.390 Mhz** **136.000 to 173.390 Mhz Federal only**
Modulation	**Narrow Band FM Voice (11K2F3E), FSK data 20K0F1D or 1K30F1D**
Microphone	**Internal Digital Microphone with oversampling**
Audio processing	**Internal Digital Signal Processing (DSP)**
Scrambling	**Configurable audio frequency inversion scrambling**
Antenna	**Snap on wire antenna - MMCX connector**
Spurious emissions and harmonics	**Meets or exceeds FCC part 90 and part 15 requirements.**
Operating temperature	**0 to 60˚C (32 to 140˚F) Non-condensing**
Charging temperature	**0 to 45˚C (32 to 113˚F) Non-condensing**
Power sources	**Rechargeable internal lithium ion battery or external power via USB MicroB (5V). Maximum current ~250 mA (when charging and powering C-CAT Mini).** **On models with pigtail power leads, 4.5-12 VDC nominal, 15 VDC maximum. DC power in ~450 mW (with 100 mW transmit setting with SD card recording)**
Approximate operating time with internal battery at 20˚C/70˚F	**100 mW transmit ~ 2 hours** **50 mW transmit ~ 3 hours** **10 mW transmit ~ 4 hours** **Transmitter off (SD card recording only) ~ 5 hours**
Dimensions	**41mm x 23mm x 8 mm/1.6” x 0.9” x 0.3”**
Weight	**12 grams/0.4 oz. (with battery and antenna)**
SD card compatibility	**SDHC MicroSD card Class 10 or faster, 32 GB Maximum** **Recording time is approximately 17 hours and 50 mins per 2GB file**